

*Palomar Planet-Crossing Asteroid Survey (PCAS)*

1/1990 - 2/1991 . . . . . E. F. Helin

PCAS continues to make major gains in the discovery of Near-Earth Asteroids (NEA'S) as well as other classes of asteroids related to the evolution of objects into planet-crossers. Fourteen NEA's (5 Apollos and 9 Amors) have been found during the period of January, 1990 through February, 1991. Also, 43 special high inclination asteroids were discovered. Thirteen asteroids have been recovered which has led to their permanent numbering. Of these, two are NEA's. Our best observed mission candidate, 1982 DB was recovered in September, 1990 and subsequently numbered (4660). With it's well-determined orbit, it offers many opportunities for missions in the next 15 years.

Several of our NEA discoveries (1990 MF, 1990 OS, and 1991 AQ) made relatively close approaches to the Earth allowing successful radar observations to be made. S. Ostro's (JPL) detection of echos from these asteroids provides otherwise unavailable information about their physical properties. Also, our role in alerting radar astronomers about new candidate asteroids (in real time) makes it possible for them to acquire critical astrometry which dramatically improves the orbital elements of the new discovery. Earth-crossing Amor asteroid, 1990 SQ, has proven to be the brightest asteroid amongst the Earth-crossers at a very bright absolute magnitude, H=12.5, about 10km in diameter. This indicates that the entire known population of NEA's (including the brightest) is not yet complete.

Our rate of discovery increased to one per month in 1990 which exceeds any other previous record.